DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Proposal to List the Cracking Pearly Mussel as an Endangered Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to list the cracking pearly mussel (*Hemistena* (=*Lastena*) *lata*) as an endangered species under the Endangered Species Act of 1973, as amended (Act). This species, which was once known from the Ohio, Cumberland, and Tennessee River systems, is presently known to survive only at a few shoals in the Clinch, Powell, and Elk Rivers, and possibly a short reach of the Tennessee and Green Rivers. The species' range has been seriously restricted by the construction of impoundments and by other impacts to its habitat. Due to the species' limited distribution, any factors that adversely modify habitat or water quality in the river reaches it now inhabits could further threaten the species. Comments and information pertaining to this proposal are sought from the public.

DATES: Comments from all interested parties must be received by April 18, 1989. Public hearing requests must be received by April 3, 1989.

ADDRESS: Comments and materials concerning this proposal should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, Asheville Field Office, 100 Otis Street, Room 224, Asheville, North Carolina 28801. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Mr. Richard G. Biggins at the above address (704/259-0321 or FTS 672-0321).

SUPPLEMENTARY INFORMATION:

Background

The cracking pearly mussel (*Hemistena* (=*Lastena*) *lata*) was initially described by Rafinesque (1820). This freshwater mussel has a thin, medium-size, elongated shell (Bogan and Parmalee 1983). The shell's outer surface is brownish green to brown and often has broken dark green rays. The nacre (inside of shell) color is pale bluish to purple. Because of its rarity, little is known of the mussel's biology. The species inhabits moderate-size streams on gravel riffles where it is often deeply buried in the substrate (Bogan and Parmalee 1983). Like other freshwater mussels, it feeds by filtering food particles from the water. It has a complex reproductive cycle in which the mussel larvae parasitize fish. The mussel's life span, fish species its larvae parasitize, and other aspects of its life history are unknown.

The cracking pearly mussel has undergone a substantial range reduction. It was historically distributed in the Ohio, Cumberland, and Tennessee River systems (Stansbery 1970, Kentucky Nature Preserves Commission 1980, Bogan and Parmalee 1983, Bates and Dennis 1985). The loss of populations occurring in these river systems was probably due to direct impacts of impoundments, pollution, and habitat alteration and the indirect impacts associated with the reduction or elimination of its larval host species by these same factors. Based on personal communications with knowledgeable mussel experts (Steven Ahlstedt and John Jenkinson, Tennessee Valley Authority, 1987; Arthur Bogan, Philadelphia Academy of Sciences, 1987; Richard Neves, Virginia Polytechnic Institute and State University, 1987; David Stansbery, Ohio State University, 1987) and a review of current literature on the species (see above plus Ahlstedt 1986), the species is definitely known to survive in only three river reaches—the Clinch River, Hancock County, Tennessee, and Scott County, Virginia; the Powell River, Hancock County, Tennessee, and Lee County, Virginia; and the Elk River, Lincoln County, Tennessee.

Although the species has not been collected in the Green River since 1966, and a survey of the Green River in Hart and Edmonson Counties in 1987 failed to collect the species, there is a possibility that an isolated population may still exist in the Green River (Richard Hannan, Kentucky Nature Preserves Commission, personal communication, 1988). Another small population may also still exist in the Tennessee River below Pickwick Dam in Hardin County, Tennessee (Paul Yokley, Jr., University of North Alabama, personal communication, 1988). Live specimens have not been taken below Pickwick Dam since the 1970s, but a few relict shells have been taken in the 1980s, indicating that a small population may still be holding on in a short reach of the Tennessee River.

All of the known populations and the populations that may exist in the Green and Tennessee Rivers are threatened, and are located in areas bordered primarily by private lands. The Powell River is severely threatened by the impacts of coal mining. The Clinch River, although in much better condition, is also impacted by coal mining and in the past has experienced extensive fish and mussel kills caused by toxic spills from a riverside power plant. The Elk River mussel fauna has been impacted by cold-water discharges from Tims Ford Reservoir, and the Green River has had a history of water quality problems from oil and gas production in the watershed. The Tennessee River below Pickwick Dam has been impacted by gravel dredging, channel maintenance work and the upstream reservoir.

The cracking pearly mussel was recognized by the Service in the May 22, 1984, **Federal Register** (49 FR 21664) as a species that was being considered for possible addition to the Federal List of Endangered and Threatened Wildlife and Plants. This mussel was then placed in category 2 on this candidate list. Category 2 is for those species for which the Service has some information indicating that the taxa may be under threat, but sufficient information is lacking to prepare a proposed rule. The Service has met and been in phone contact with various Federal and State agency personnel concerning the species' status and the need for the protection provided by the Endangered Species Act. On January 14, 1988, and May 16, 1988, the Service also notified appropriate Federal, State, and local governmental agencies by mail that a status review was being conducted and that the species might be proposed for listing. Nine written comments were received. The National Park Service provided distributional data. The States of Virginia, Kentucky, and Indiana and an interested scientist responded with distribution and threat data and were supportive of the species' being protected under the Act. The Tennessee Valley Authority and the State of Tennessee supported our efforts to review the species' status. No negative comments were received.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal list. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the cracking pearly mussel are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The cracking pearly mussel was once fairly widely distributed in the Ohio River basin. It ranged in the Ohio River from Ohio downstream to Illinois (Bogan and Parmalee 1983). In Indiana and Illinois it was historically known from the White, Wabash, and Tippecanoe Rivers (Kevin Cummings, Illinois State Natural History Survey Division, and Max Henschen, Mollusk Technical Advisory Committee, personal communications, 1988) Kentucky records (Kentucky Nature Preserves Commission 1980: Richard Hannan, Kentucky Nature Preserves Commission, personal communication, 1988) show that the species once inhabited the upper Cumberland, Big South Fork, Green, and Kentucky Rivers. The cracking pearly mussel has historically been taken in Tennessee from the Tennessee, Cumberland, Powell, Clinch, Holston, Elk, Duck, and Buffalo Rivers (Bogan and Parmalee 1983, Ahlstedt 1986, Bates and Dennis 1985) In Alabama, this mussel existed in the Tennessee River (Bogan and Parmalee 1983). Portions of the Powell, Clinch, and Holston Rivers in Virginia are also reported to have supported the species (Bogan and Parmalee 1983; Charles Sledd, Virginia Department of Game and Inland Fisheries, and Michael Lipford, Virginia Department of Conservation and Historic Resources, personal communications, 1988)

Based on a literature review (see above) and personal contacts with knowledgeable Federal, State, and independent biologists, the species is presently known to be surviving only in the Clinch River, Hancock County, Tennessee, and Scott County, Virginia; the Powell River, Hancock County, Tennessee, and Lee County, Virginia; and the Elk River, Lincoln County, Tennessee. The species may also still

survive in the Green River, Hart and Edmonson Counties, Kentucky (Richard Hannan, personal communication, 1988), and in a short reach of the Tennessee River below Pickwick Dam, Hardin County, Tennessee (Paul Yokley, Jr., personal communication, 1988).

The Powell River's population was sampled in 1979 by the Tennessee Valley Authority (Ahlstedt 1986). They surveyed 78 sites over about 97 river miles and found the cracking pearly mussel at only three sites. The Powell River watershed is mined extensively for coal, and coal mining impacts to the river are evident. The upper reaches of the Powell River are significantly impacted. The lower river reaches, which still contain a relatively diverse mussel fauna, have large deposits of coal fines and silt (Ahlstedt 1986). In 1973 the section of the Powell River inhabited by the cracking pearly mussel experienced a mussel kill that may have resulted in a loss of 5 percent of the mussel population (Ahlstedt and Jenkinson 1987).

The Clinch River population of the cracking pearly mussel is the largest and covers the greatest river length. Ahlstedt (1986) reported the species from 18 of the 141 sites sampled in a 1978–83 Tennessee Valley Authority survey that covered about 174 river miles. Although this river and its mussel fauna are apparently healthier than the Powell, the Clinch River does have environmental degradation problems. Charles Sledd (Virginia Commission of Game and Inland Fisheries, personal communication, 1988) stated that land use practices along the Clinch have contributed to the loss of water quality and decline in mussel populations. The Clinch River also experiences some impacts from coal mining, and the river has been subjected to two mussel kills that resulted from toxic substance spills from a riverside coal-fired power plant.

The cracking pearly mussel was taken at only two of 108 sites over the 172 miles of the Elk River surveyed in 1980 by the Tennessee Valley Authority (Ahlstedt 1986). This river, according to Ahlstedt (1986), has a considerable amount of suitable habitat for freshwater mussels, and a large number of relic shells was present. However, Ahlstedt (1986) reported that cold-water releases from Tims Ford Reservoir and pollution from an unknown source in the lower Elk River have impacted the mussel fauna, and mussel density has been reduced.

The cracking pearly mussel has not been taken since 1966 from the Green River, and a 1987 mussel survey did not find the species (Ronald Cicerello, Kentucky Nature Preserves Commission, personal communication, 1988). However, suitable habitat appears to be available in the Green River, and an isolated population may still exist there (Richard Hannan, personal communication, 1988). In the Tennessee River live specimens were taken in the 1970s, but only relic shells have been taken in recent years. According to personal communication with Dr. Paul Yokley, Jr., (1988), this species, which apparently existed only in small numbers in this river reach, could possibly still survive there.

If populations still persist in the Tennessee River below Pickwick Dam in Tennessee and the Green River in Kentucky, these populations are also at risk. The Green River's mussel fauna has also been seriously depleted. Ortmann (1926) reported finding 66 species of mussels in the Green River. Isom (1974) reported only 27 species present. The Green River has been degraded by oil and gas exploration and production and by alterations of stream flow from an upstream reservoir. Any population below Pickwick Dam in the Tennessee River is potentially threatened by gravel dredging, channel maintenance, and operation of Pickwick Dam. This river reach also experienced a mussel die-off in 1985 and 1986 (Ahlstedt and Jenkinson 1987).

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* This freshwater mussel species is not commercially valuable, but because of its rarity it could be sought by collectors. Thus, because of the species' restricted range, taking could be a threat to its continued existence. Federal listing would help control any indiscriminate taking of individuals.

C. *Disease or predation.* Although the cracking pearly mussel is undoubtedly consumed by predatory animals, there is no evidence that predation threatens the species. However, freshwater mussel die-offs, possibly due to disease, have been reported in recent years throughout the Mississippi River basin, including the Tennessee River and its tributaries (Ahlstedt and Jenkinson 1987). Significant losses have occurred to some populations.

D. *The inadequacy of existing regulatory mechanisms.* The States of Kentucky, Tennessee, and Virginia prohibit taking fish and wildlife, including freshwater mussels, for scientific purposes without a State collecting permit. However, these States' laws do not protect the species' habitat from the potential impacts of Federal actions. Federal listing would provide the species additional protection under the Endangered Species Act by requiring a Federal permit to take the species and by requiring Federal agencies to consult with the Service when projects they fund, authorize, or carry out may adversely affect the species.

E. *Other natural or manmade factors affecting its continued existence.* The Powell River and Elk River populations are small, and if the species continues to exist in the Green River and Tennessee River, these populations must be very limited. All the populations are geographically isolated from each other. This isolation restricts the natural interchange of genetic material between the populations, and the small population size reduces the reservoir of genetic variability within the populations. It is likely these populations, with the possible exception of the Clinch River, are now below the generally acceptable level (Soule 1980) required to maintain long-term genetic viability.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to propose this rule. Based on this evaluation, the preferred action is to list the cracking pearly mussel (*Hemistena* (=*Lastena*) *lata*) as an endangered species. Historical records reveal that the species, although now rare, was once widely distributed in the Ohio River drainage. Presently only three, small, isolated populations, and possibly two others, are known to survive. These populations are all threatened by a variety of factors, including gravel dredging, coal mining, oil and gas resource development, and other factors that adversely impact the aquatic environment. Due to the species' history of population losses and the vulnerable nature of the populations, threatened status does not appear appropriate for this species. See the following section for a discussion of why critical habitat is not being proposed for the cracking pearly mussel.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate any habitat of a species that is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for the cracking pearly mussel at this time, owing to the lack of benefits from such designation. The U.S. Army Corps of Engineers, the Tennessee Valley Authority, and the National Park Service are the three Federal agencies

most involved, and they, along with the State natural resources agencies in Tennessee, Kentucky, and Virginia, are already aware of the location of the remaining populations that would be affected by any activities in these river reaches. These Federal agencies have conducted studies in these river basins and are knowledgeable of the fauna and of their projects' impacts. No additional benefits would accrue from critical habitat designation that would not also accrue from the listing of the species. In addition, this species is so rare that taking for scientific purposes or private collections could be a threat. The publication of critical habitat maps and other information accompanying critical habitat designation, such as the location of inhabited river reaches, could increase that threat. The location of populations of this species have consequently been described only in general terms in this proposed rule. Available precise locality data will be accessible to appropriate Federal, State, and local governmental agencies through the Service office described in the "**ADDRESSES**" section.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibition against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in the destruction or adverse modification of proposed critical habitat. If a species is subsequently listed, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. The Service has notified Federal agencies that may have programs that affect the species. Federal activities that could occur and impact the species include, but are not limited to, the carrying out or the issuance of permits for hydroelectric facility construction and operation, reservoir construction, river channel maintenance, stream alterations, wastewater facilities development, and road and bridge construction. It has been the experience of the Service, however, that nearly all section 7 consultations have been resolved so that the species has been protected and the project objectives have been met. In fact, the areas inhabited by the cracking pearly mussel are also inhabited by other mussels that have been federally listed since 1976. The Service has a history of successful section 7 conflict resolutions that have protected the species and provided for project objectives being met throughout these areas.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take any listed species, import or export it, ship it in interstate commerce in the course of commercial activity, or sell it or offer it for sale in interstate or foreign commerce. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions would apply to agents of the Service and State conservation agencies

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes to enhance the propagation or survival of the species and/or for incidental take in connection with otherwise lawful activities. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be suffered if such relief were not available.

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of this proposal are hereby solicited. Comments particularly are sought on:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) The location of any additional populations of this species and the reasons why any habitat should or should not be determined to be critical habitat as provided by Section 4 of the Act;

(3) Additional information concerning the range and distribution of this species; and

(4) Current or planned activities in the subject area and their possible impacts on this species.

Final promulgation of the regulation on this species will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of the proposal. Such requests must be made in writing and addressed to the Field Supervisor, U.S. Fish and Wildlife Service, Asheville Field Office, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

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Author

The primary author of this proposed rule is Richard G. Biggins, U.S. Fish and Wildlife Service, Asheville Field Office, 100 Otis Street, Room 224, Asheville, North Carolina 28801 (704/259-0321 or FTS 672–0321).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411; Pub. L. 100–478, 102 Stat. 2306; Pub. L. 100–653, 102 Stat. 3825 (16 U.S.C. 1531 *et seq.*); Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under CLAMS, to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

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(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CLAMS							
*	*	*	*	*	*	*	
Pearly mussel, cracking	*Hemistena* (=*Lastena*) *lata*	U.S.A. (AL, IL, IN, KY, OH, TN, VA).	NA	E		NA	NA
*	*	*	*	*	*	*	

Dated: December 22, 1988.

Becky Norton Dunlop,

Assistant Secretary for Fish and Wildlife and Parks.

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